

# AQUEOUS-BASED SOLVENTS

## HAZARDS & RULES

### **Base Materials - Hazards & Impacts**

Aqueous (water) based cleaners are generally less toxic alternatives to petroleum-based solvents. Unlike petroleum-based solvents, there are generally no hazards or adverse impacts associated with the base materials found in aqueous-based solvents. These solvents are made up of water and detergent, which may be an acid, alkaline or a citrus-based solution.

Because the hazards and impacts of a given product will vary depending upon the product's formulation, you should check the Material Safety Data Sheet (MSDS) to determine if a specific aqueous-based solvent is hazardous to human health and/or the environment.

### **Additives and Contaminants - Hazards & Impacts**

Used aqueous cleaners can contain a number of contaminants, including oil and grease, lead, chromium, cadmium, and any precleaners used by your shop. The oil and grease may emulsify (i.e., break down into small globules) in heated and mechanically agitated parts washing systems. The result is that the oil and grease may be more difficult to separate from the used cleaning solution, potentially resulting in contamination levels that do not meet publicly owned treatment works' (POTW) limits.

Both lead and chromium are frequently used as coatings on metal parts. A thin layer of these coatings may wash off when the parts are cleaned, leaving contaminants in the used solvent. High levels of these heavy metals may make the used solvent a hazardous waste. Precleaners are another source of contamination to your used aqueous solution. If your precleaners contain any chemicals that are on the list of listed hazardous wastes, your used solvent will automatically be a hazardous waste. Used solvent that exhibits a hazardous waste characteristic will also be a hazardous waste.

### **Regulatory Overview**

Depending upon the type and level of contamination, your used solvent may be unacceptable for discharge to your local POTW or may be a hazardous waste. Note that, if you wish to discharge your aqueous cleaning solution, your shop's drain should be connected to a POTW. For information on discharging your used solvent, see the Wastewater section in Chapter 5. For information on making a hazardous waste determination and managing hazardous waste, see Chapter 3.

## **MANAGEMENT RESPONSIBILITIES**

Listed below are the regulations that you must follow. Also listed are suggestions that you should follow in order to ease your regulatory requirements and improve the environmental health of your shop.

### **You Must:**

- make a hazardous waste determination and manage your used aqueous solution accordingly.
- not discharge your used aqueous solution unless you are connected to a POTW or a holding tank or unless your shop has an NPDES permit. If you are discharging to a POTW, you must ensure that the discharge meets the effluent limits set by the POTW. See the Wastewater section in Chapter 5 for more information.
- when transporting solvent, label the shipment to meet DOT requirements. The following is a commonly used shipping description for used aqueous solvent:  
“Hazardous waste, liquid, n. o. s., 9, NA3082, PGIII, D006, D039, DRG171, Aqueous Parts Cleaner”

### **You Should:**

- reduce the amount of contaminants in your used aqueous solution by doing the following:
  - use high-quality (i.e., soft) water in your aqueous cleaning machine. Hard water requires that you use more detergent in order to effectively clean parts, resulting in more contaminated wastewater.
  - preclean parts prior to washing them. Much of the dirt and oil may be removed by draining, wiping with a shop towel, or by scraping or wire brushing.
  - if you must use precleaners, substitute less toxic precleaners for those that contain hazardous and/or toxic constituents.
  - use a detergent that is a good cleaner, but a poor emulsifier (i.e., does not break oil and grease down into small globules.) Oil and grease that is not broken down will separate from the aqueous cleaning solution and can then be removed using an oil skimmer. See the Used Oil section in Chapter 5 for information on managing this oil.
  - allow your heated aqueous solution to cool prior to discharging it. The emulsified oil and grease should separate from the cleaning solution as it cools. Remove the oil and grease using an oil skimmer.
  - replace your aqueous solution before it exceeds your POTW’s discharge limits.
  - reduce the amount of solids in your used aqueous solution by filtering the solution as it is discharged.

Note that these practices may extend the life of your aqueous solution and/or help keep your used solution within your POTW’s discharge limits.

### **You Should Consider:**

- purchasing an aqueous parts washer that is equipped with a skimmer and a timer.

## **BACKGROUND ON OPTIONS TO CONSIDER**

Purchasing an aqueous parts washer with a skimmer and a timer will provide your shop with several benefits. First, the timer will allow you to automatically turn the washer's heater unit on and off at certain times each day. Turning the heat off at the end of each day not only saves energy, but also allows the aqueous solvent to cool and the oil and grease to separate. The timer can then schedule the skimmer to remove the oil and grease that has risen to the top of the solvent. Frequent skimming of these contaminants will keep your solvent at its peak operating efficiency. Finally, the timer can be set to automatically turn the heater unit back on so that the solvent is ready to use at the beginning of each work day.